ABSTRACT OF THE DISCLOSURE

A layered membrane or membrane electrode assembly for use with a direct oxidation fuel cell provides reduced water carryover and fuel crossover while maintaining a high total protonic exchange between anode and cathode. A layer of material which is substantially impermeable to water and fuel, but which is foraminous to allow contact between adjacent protonically conductive layers, is used to significantly increase the system's carryover resistance while only modestly increasing the total reaction resistance.